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EXAMINER

CHEN, WENPENG

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/802,600

Applicant(s)

OGATA ET AL.

Examiner

Wenpeng Chen

Art Unit

2624

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 31-116 is/are pending in the application.
- 4a) Of the above claim(s) 57-116 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 31-56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 8/28/07 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

***Election/Restrictions***

1. Applicant's election without traverse of Species I, Claims 31-56, in the reply filed on 8/28/2007 is acknowledged.

***Specification***

2. The disclosure is objected to because of the following informalities.

-- The term "increases" in line 20, page 22 shall be changed to "decreases".

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

3. Claims 32-34 and 45-47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for the following reasons:

There are insufficient antecedent bases for the following limitations.

-- Claim 32 recites "the determination result" in lines 3-4 and "the characteristic amounts" in lines 4-5.

-- Claim 33 recites "the low frequency components" in line 4.

-- Claim 34 recites "the low frequency components" in line 5.

-- Claim 45 recites "the characteristic amounts" in lines 4-5.

-- Claim 46 recites "the low frequency components" in lines 3-4.

-- Claim 47 recites "the low frequency components" in line 5.

***Claim Rejections - 35 USC § 102***

4. Claims 31-34, 41, 44-47, and 54 are rejected under 35 U.S.C. 102(b) as being anticipated by Tamura et al. (US patent 5,517,333.)

Tamura teaches an image processing apparatus capable of correcting the gradation of image data, comprising:

-- for Claim 31, brightness data separation means for separating brightness data and color data from the image data; (Fig. 20; column 4, lines 16-18; column 12, lines 12-51; RGB are separated into luminance signal Y and color signal C. RGB are separated into luminance signal Y and color difference signals, R-Y and B-Y. Signals C, R-Y, and B-Y are all color data.)

-- for Claim 31, area discrimination means for discriminating areas to which the image data belong and outputting discrimination results; (column 8, line 57 to column 9, line 33; Figs. 4 and 14; LPF 1305 is the area discrimination means which provides value for discrimination.)

-- for Claim 31, coefficient calculation means for outputting correction coefficients to be used for correction of pixel values of the brightness data based on the discrimination results received from said area discrimination means; (column 8, line 57 to column 9, line 33; Figs. 4 and 14; Circuits 1303 and the combination of 1402 and 1403 are the coefficient calculation means.)

-- for Claim 31, correction means for correcting the pixel values of the brightness data and the color data with the correction coefficients; (column 4, line 45 to column 5, line 17;

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column 8, line 57 to column 9, line 33; column 20, lines 12-51; Figs. 4, 14, 20; Blocks 107 and 1406 are the correction means. Especially, elements 1406 correct both the brightness data and the color data.)

-- for Claim 32, wherein said area discrimination means detects a characteristic amount indicative of a characteristic of a predetermined range neighboring to each of the brightness data and outputting the discrimination result, and said coefficient calculation means outputs the correction coefficients based on the characteristic amounts received from said area discrimination means; (column 4, line 45 to column 5, line 17; column 8, line 57 to column 9, line 33; Figs. 4 and 14; especially column 9, lines 4-8)

-- for Claim 33, wherein said area discrimination means includes a low-pass filter for extracting a low frequency component of each of the brightness data, and said coefficient calculation means produces the correction coefficients in response to the low frequency components received from said low-pass filter; (column 4, line 45 to column 5, line 17; column 8, line 57 to column 9, line 33; Figs. 4 and 14; LPF)

-- for Claim 34, wherein said area discrimination means includes quantization means for quantizing the brightness data, and a low-pass filter for extracting a low frequency component from each of the brightness data quantized by said quantization means, and said coefficient calculation means produces the correction coefficients in response to the low frequency components received from said low-pass filter; (column 4, line 45 to column 5, line 17; column 3, line 63 to column 4, line 19; The A/D converter provides the quantization means.)

-- for Claim 41, wherein said correction means multiplies the pixel values of the brightness data and the color data by the correction coefficients to correct the pixel values of the image data; (multipliers 1406 of Fig. 20)

The above-cited passages also teach the corresponding method Claims 44-47 and 54.

*Claim Rejections - 35 USC § 103*

5. Claims 35-40 and 48-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US patent 5,517,333) in view of Takamori (US patent 6,252,995.)

6. Tamura teaches the Parental Claims 31 and 44. However, Tamura does not teach explicitly the features related to a plurality of low-pass filters recited in Claims 35, 38, 48, and 41.

Takamori teaches an image processing apparatus capable of correcting the gradation of image data (Fig. 5; Takamori modifying gradation of an image and thus correcting the gradation of the image), comprising:

- area discrimination means for discriminating areas to which the image data belong and outputting discrimination results; (column 6, lines 21-62; Fig. 5; The average density level is the discrimination results.)

- coefficient calculation means for outputting correction coefficients to be used for correction of pixel values of the image data based on the discrimination results; (Blocks 42 and 44' of Fig. 5; column 6, lines 21-62)

- correction means for correcting the pixel values of the image data with the correction coefficients; (column 6, lines 21-62; Fig. 5; The value h is outputted.)

- wherein said area discrimination means includes a plurality of low-pass filters for individually extracting low frequency components of each of the brightness data with different

frequency bands, and signal composition means for producing single composite signals based on the low frequency components outputted from said low-pass filters, and said coefficient calculation means produces the correction coefficients based on the composite signals received from said signal composition means;; (column 6, lines 21-62; blocks 30 and 32 of Fig. 5; Each of the average density values is generated by a LPF. Block 40 produces the composite signals absSd'. The value absSd' is used to generate correction coefficients h. The LPFs have different size that corresponding to different spatial frequency bands.)

-- wherein said area discrimination means includes a plurality of low-pass filters for individually extracting low frequency components of each of the brightness data with different frequency bands, and said coefficient calculation means includes partial coefficient calculation means for producing coefficients for correction from the low frequency components outputted from said low-pass filters, and coefficient composition means for producing the correction coefficients based on the coefficients for correction; (column 6, lines 21-62; blocks 30 and 32 of Fig. 5; Each of the average density values is generated by a LPF. Block 40 produces the composite signals. Because the cited passage teaches the function of the recited partial coefficient calculation means, the Examiner considers that Takamori also teaches this feature. The LPFs have different size that corresponding to different spatial frequency bands.)

-- wherein said signal composition means weighted averages the low frequency components outputted from said low-pass filters to produce the composite signals; (column 6, lines 21-62; The Sma is weighted with 1 and the Smb is weighted with -1 to produce Sd'.)

-- wherein said signal composition means weighted adds the low frequency components outputted from said low-pass filters with weighting coefficients set in advance to produce the composite signals. (column 6, lines 21-62; The Sma is weighted with preset 1 and the Smb is weighted with another preset -1 to produce Sd'.)

It is desirable to enhance sharpness of an image through gradation conversion without introducing unwanted granularity or roughness in an original uniform area. Takamori's approach for gradation conversion is to achieve this goal. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Takamori's teaching to substitute Tamura's elements 1401 and 1402 with Takamori's elements 30, 32, 36, 38, 40, 42, 44', and 46 to generate the correction coefficients for gradation conversion, because the combination enhances sharpness of an image without introducing unwanted granularity or roughness.

7. Claims 42 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US patent 5,517,333) in view of Morikawa (US patent 5,550,955.)

Tamura teaches the Parental Claims 31 and 44. However, Tamura does not teach explicitly the steps related to bit number recited in the above-listed claims.

Morikawa teaches an imaging correction system wherein the number of bits of the image data outputted from a correction means is smaller than the number of bits of the image data inputted to an image processing apparatus. (column 2, lines 41-52; column 5, line 25 to column 6, line 7)

It is desirable to reduce false contour in gradation conversion. Morikawa points out that the artifact can be reduced with having data with more bits than the bits of data delivered to an output device. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Morikawa's teaching to use  $n$  bits for all the data involving the gradation correction in Tamura's gradation correction method and output  $m$  bits for further processing,



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wherein  $m < n$ , because the combination improves quality of the processed image with reducing false contour.

8. Claims 43 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tamura et al. (US patent 5,517,333) in view of Ohtsubo et al. (US patent 5,170,249.)

Tamura teaches the Parental Claims 31 and 44. However, Tamura does not teach explicitly the steps related to data sampling and superposition recited in the above-listed claims.

Ohtsubo teaches an imaging system to provide;

-- image data for standard TV systems, wherein an amplitude modulated color signal is sequentially superposed on a brightness signal, with a predetermined frequency. (Figs. 1 and 11; column 10, lines 61 to column 11, line 20.)

It is desirable to correct gradation of existing image data in a standard TV format. It would have been obvious to one of ordinary skill in the art, at the time of the invention, to apply Tamura's gradation correction method to improve quality of image data having a standard TV format data taught by Ohtsubo, because the combination improves quality of the existing image data. The combination thus teaches processing image data wherein the image data are data is obtained by sampling a signal and for the data wherein an amplitude modulated color signal is sequentially superposed on a brightness signal, with a predetermined frequency.

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wenpeng Chen whose telephone number is 571-272-7431. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for regular communications and 571-273-8300 for After Final communications. TC 2600's customer service number is 571-272-2600.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Wenpeng Chen  
Primary Examiner  
Art Unit 2624

November 7, 2007

